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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/566,227	01/27/2006	Michael Guggemos	36605	3740

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Philadelphia, PA 19103

EXAMINER
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VAN, LUAN V

ART UNIT	PAPER NUMBER
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1795

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07/16/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/566,227	<b>Applicant(s)</b> GUGGEMOS ET AL.	
	<b>Examiner</b> LUAN V. VAN	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 July 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2,5-12,14,15,17-23,35-37,39-45,47-50,52 and 53 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 5-12, 14, 15, 17-23, 35-37, 39-45, 47-50, 52, and 53 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)         | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

Claims 1, 2, 5-12, 14, 15, 17-23, 35-37, 39-45, 47-50, 52, and 53 are pending in the present application. Claims 24-25 and 28-34 are withdrawn.

### ***Status of Objections and Rejections***

All rejections from the previous office action are withdrawn. New grounds of rejection under 35 U.S.C. 103(a) are necessitated by the amendments.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 2, 5-12, 14, 15, 17-23, 35-37, 39-45, 47-50, 52, and 53 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Independent claims 1 and 35 recite "a contacting electrode washing station," however, the term "washing station" is inconsistent with the term used to describe the device for rinsing the contacting electrode. The applicant uses the term "rinsing facility" in the original claim 16, currently canceled, to describe this washing station. The applicant also modified the specification to disclose rinsing facilities in the amendment of the specification filed on March 31, 2010. The applicant originally used the term

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"rinsing facility" in the amendment to claim 1 filed on March 2, 2010, and was somehow subsequently changed to "washing station" in the subsequent amendment filed on March 31, 2010. It is suggested that the applicant use "rinsing facility" to be consistent with the original claim and the specification.

The terms "such a small diameter" and "so small" in claim 12 is a relative term which renders the claim indefinite. The terms "such a small diameter" and "so small" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

The term "so close proximity" in claim 14 is a relative term which renders the claim indefinite. The term "so close proximity" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

### ***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 2, 5, 8-12, 14, 17-23, 35-37, 39-45, 47 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hartmann et al. (US patent 5425862) in view of Lovejoy (US 4324633).

Regarding claims 1, 35, and 52, Hartmann et al. teaches a device for electroplating a substrate, said device comprising: a) at least one arrangement, comprising at least one electrode (9-16, Fig. 1) for contacting the work pieces (1) and at least one electrolysis region in a respective one of which at least one counter electrode (24, 25) and the work pieces (1) are in contact with the processing liquid, characterized in that b) the at least one contacting electrode (9-16) is disposed outside of the at least one electrolysis region and is not in contact with the processing liquid, and c) the at least one contacting electrode (9-16) and the at least one electrolysis region are spaced so close together that small electrically conductive structures can electrolytically be treated, further characterized in that d) at least two contacting electrodes (9-16) are provided, at least one of them being disposed on one side of the electrolysis region and the at least other one on the other side of the electrolysis region (i.e., the electrodes 9-16 are provided on both sides of the electroplating chambers 6-8, see Fig. 1), and f) a cell wall exposed at the exit of an electrolysis region having an opening for the conveying path said opening having sealing members (22, 23) to prevent liquid escape with the workpiece passing by (Fig. 2). Further addressing claim 35, Hartmann et al. teaches a tampon of soft, open-pored plastic foam (column 4 lines 10-20) is positioned on both sides between the plastic film and a stationary part (i.e., anode). This reads on the isolation material of the instant claim.

Hartmann et al. differs from the instant claims in that the reference does not explicitly teach the spacing between the contacting electrode and electrolysis region

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being no more than a few centimeters apart (claim 1) or a contacting electrode washing station (claims 1 and 35).

However, Hartmann et al. teaches that the spacing between two bonding devices (i.e., electrodes) following one behind the other in the direction of movement of the plastic film should preferably not be too great, so that that voltage drops within the plastic film do not result in non-uniform electroplating (column 2 lines 58-63). Furthermore, the length of the individual electroplating chambers is governed by the permissible voltage drop within the plastic film (column 2 lines 66-68).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the spacing between the contacting electrode and electrolysis region and the length of the electrolysis region through routine experimentation in order to minimize the voltage drop within the substrate, as suggested by Hartmann et al. Furthermore, it is understood to one having ordinary skill in the art that when designing an apparatus, the size and relative proportion of the apparatus features can be selected to have the appropriate dimensions in order to accommodate the substrate to be treated. In *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), *cert. denied*, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device (MPEP 2144.04(IV)).

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Lovejoy teaches an electrolytic apparatus for treating a continuous strip material comprising a rinse tank 12 (Fig. 4) housing a plurality of contact rollers 18 which establishes electrical connection with the strip as it travels through the tank (column 1 line 60 -- column 2 line 5). One or more spray nozzles are preferably mounted in the upper portion of the chamber for spraying water or a suitable rinse solution on the strip (column 3 lines 13-16).

Since the electrolyte contains sulfuric acid (column 12 lines 32-34 of Hartmann et al.) and acids are known to corrode metals, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have incorporated the rinse tank of Lovejoy for rinsing the contacting electrodes of Hartmann et al., because it would wash the contacting electrodes, thus minimizing corrosion to the contacting electrodes.

Regarding claim 2, Hartmann et al. teaches a tampon of soft, open-pored plastic foam (column 4 lines 10-20) is positioned on both sides between the plastic film and a stationary part (i.e., anode). This reads on the isolation material of the instant claim. Hartmann et al. does not explicitly teach whether the isolation material covers the entire length of the counter electrode. However, Hartmann et al. further teaches that this tampon lend the plastic film a certain stability so that sporadic yielding or buckling out is made more difficult (column 4 lines 15-20). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the size of the tampon of Hartmann et al. to cover the entire length of the counter electrode, because it would further increase the stability of the substrate within the

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electrolytic chamber, thus minimizing sporadic yielding or buckling (column 4 lines 15-20 of Hartmann et al.).

Regarding claim 5, Hartmann et al. teaches that the device comprises at least one processing module (6-8, Fig. 1) containing the processing liquid and the at least one counter electrode (24), the work pieces (1) being conveyed there through in a horizontal direction of transport, the at least one processing module (6-8) comprising, on the entrance and on the exit side thereof respectively, at least one passage for the work pieces (1) to enter and to exit said module and the at least one contacting electrode (9-16) being disposed on the passages.

Regarding claim 8, Hartmann et al. teaches partition members (20, 22) which comprise passages and sealing members (20, 22) for passage of the work pieces (1), the partition members being disposed between the at least one contacting electrode (9-16) and the processing liquid, said sealing members (20, 22) being disposed in such a manner that processing liquid can be prevented from coming into contact with the at least one contacting electrode (9-16).

Regarding claim 9, Hartmann et al. teaches that the sealing members are selected from the group comprising squeezing rollers (column 9 line 52).

Regarding claims 10 and 21, Hartmann et al. teaches the apparatus as described above. Hartmann et al. differs from the instant claims in that the reference does not explicitly teach whether the contacting electrodes are secured to the partition wall or the electrodes are disposed on a common carrier frame. However, since Hartmann et al. teaches that the contacting electrodes are positioned outside of the electroplating



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chamber, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have secured the electrodes on any walls outside of the plating chamber in order to prevent the plating solution from contacting the electrodes. Furthermore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have disposed the contacting electrodes and counter electrodes on a common carrier frame in order to facilitate construction of the apparatus.

Regarding claim 11, Hartmann et al. teaches roller contacts (column 3 lines 33-35).

Regarding claim 12, it is noted that the instant claim is directed to the relative dimensions of the apparatus and the structures on the substrate. Hartmann et al. does not explicitly teach the specific size of the structure to be electroplated. However, it is understood to one having ordinary skill in the art that the size of the apparatus can be designed or scaled to treat a structure having the desired size. Furthermore, Hartmann et al. teaches that the spacing between two bonding devices (i.e., electrodes) following one behind the other in the direction of movement of the plastic film should preferably not be too great, so that that voltage drops within the plastic film do not result in non-uniform electroplating (column 2 lines 58-63). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have scaled the size of the apparatus such that the structures of 2 cm can be electroplated in order to minimize the voltage drop within the substrate, as suggested by Hartmann et al.

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Regarding claim 14, since the plastic foam has open pores (column 4 lines 10-20), it is ion-permeable.

Regarding claim 17, Hartmann et al. teaches that the electrodes are elongated and are oriented substantially parallel to the conveying path (Fig. 1).

Regarding claim 18, Hartmann et al. teaches that the contacting electrodes are cathodically polarized since the substrate is being electroplated.

Regarding claim 19, the anode of Hartmann et al. is insoluble since it does not dissolve.

Regarding claim 20, the anode of Hartmann et al. is a flood anode since it has holes for allowing a passage of the plating solution.

Regarding claims 22 and 23, Hartmann et al. teaches a first and second storage facility 2 and 4.

Regarding claim 36, Hartmann et al. teaches a plurality of electrolysis regions (Fig. 1).

Regarding claim 37, Hartmann et al. teaches an upper anode 24 and a lower anode 25 (Fig. 2).

Regarding claim 39, it is the examiner's position that the processing liquid is under pressure in the electroplating chamber of Hartmann et al., since the processing liquid is pumped into the chamber and the chamber is sealed by the squeegee rollers.

Regarding claim 40, Hartmann et al. teaches sealing rollers 22 (Fig. 2).

Regarding claim 41, Hartmann et al. teaches sealing rollers 22 (Fig. 2), but does not explicitly teach an auxiliary sealing roller. However, providing the additional

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auxiliary sealing roller would have been duplication of the subject matter. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided the auxiliary sealing rollers by duplicating the sealing rollers of Hartmann et al. in order to provide additional sealing to the electroplating chamber.

Regarding claim 42, since the plastic foam has open pores (column 4 lines 10-20), it is ion-permeable.

Regarding claims 43-45 and 47, since the plastic foam is positioned between the plastic film and the anode, it prevents the plastic film from contacting the anode.

Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hartmann et al. in view of Lovejoy, and further in view of Hirt et al. (US patent 4282073).

Hartmann et al. teaches the apparatus as described above. Hartmann et al. differs from the instant claims in that the reference does not explicitly teach whether the conveying path leads into the surface of the processing liquid. It appears that the instant claims are directed to vertically immersing the substrate into the processing liquid in a plating tank.

Hirt et al. teaches an apparatus for continuously electroplating a strip substrate in a plurality of plating tanks wherein the substrate is vertically immersed into the plating tank.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the apparatus of Hartmann et al. using the

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conveying path of Hirt et al., because it would enable the continuous plating of a strip substrate.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hartmann et al. in view of Lovejoy, and further in view of Avellone (US patent 4401523).

Hartmann et al. teaches the apparatus as described above.

Regarding claim 15, Hartmann et al. differs from the instant claims in that the reference does not explicitly teach whether the conveying path is inclined. Avellone teaches electroplating apparatus for plating a metallic strip wherein the strip path is inclined to the horizontal. This improves the plating uniformity and performance (column 11 lines 1-6). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided the inclined conveying path of Avellone in the apparatus of Hartmann et al., because it would improve the plating uniformity and performance (column 11 lines 1-6 of Avellone).

Regarding claim 16, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided a rinsing facility for cleaning the contacting electrodes of Hartmann et al. in order to remove the plating solution from the contacting electrodes.

Claims 48-50 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hartmann et al. in view of Lovejoy, and further in view of Geissler et al. (US 6238529).

Hartmann et al. teaches the apparatus as described above.

Regarding claim 48, Hartmann et al. differs from the instant claims in that the reference does not explicitly teach inner partition walls. Geissler et al. teach an electroplating apparatus for treating printed circuit boards that are continuously guided in a plane of convenience in a substantially horizontal direction, and apparatus comprising an electroplating chamber having inner and outer walls 17 (Fig. 1). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have incorporated the inner walls of Geissler et al. in the apparatus of Hartmann et al., because it would improve the sealing of electroplating chamber.

Regarding claims 49 and 50, Hartmann et al. does not explicitly teach whether the isolation material is secured to the partition walls. However, it is understood to one having ordinary skill in the art that the tampon of Hartmann et al. is secured to the electroplating apparatus since it is stationary. Since the tampon can only be secured to either the anode or the partition wall, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have chosen to secure the tampon of Hartmann et al. to either the anode or the partition wall in order to prevent it from moving within the electroplating cell.

Regarding claim 53, Hartmann et al. differs from the instant claims in that the reference does not explicitly teach whether the exit wall has a pair of sealing lips. Lovejoy teaches an electrolytic apparatus for treating a continuous strip material comprising a rinse tank 12 (Fig. 2) having a plurality of resilient elastomeric wiper strips 35 on the inner faces of the exit wall that cooperate in sealing engagement with the strip

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to prevent escape of liquid from the tank (column 2 lines 17-23). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have incorporated the wiper strip of Lovejoy in the apparatus of Hartmann et al., because it would provide a sealing engagement with the strip workpiece to prevent escape of liquid from the tank. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have further provided a duplicate pair of wiper strips of Lovejoy on the outer faces of the exit wall in the apparatus of Hartmann et al., because it would provide additional sealing engagement with the strip workpiece to further prevent escape of liquid from the tank.

### ***Response to Arguments***

Applicants' arguments have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LUAN V. VAN whose telephone number is (571)272-8521. The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/LUAN V VAN/  
Examiner, Art Unit 1795  
July 13, 2010